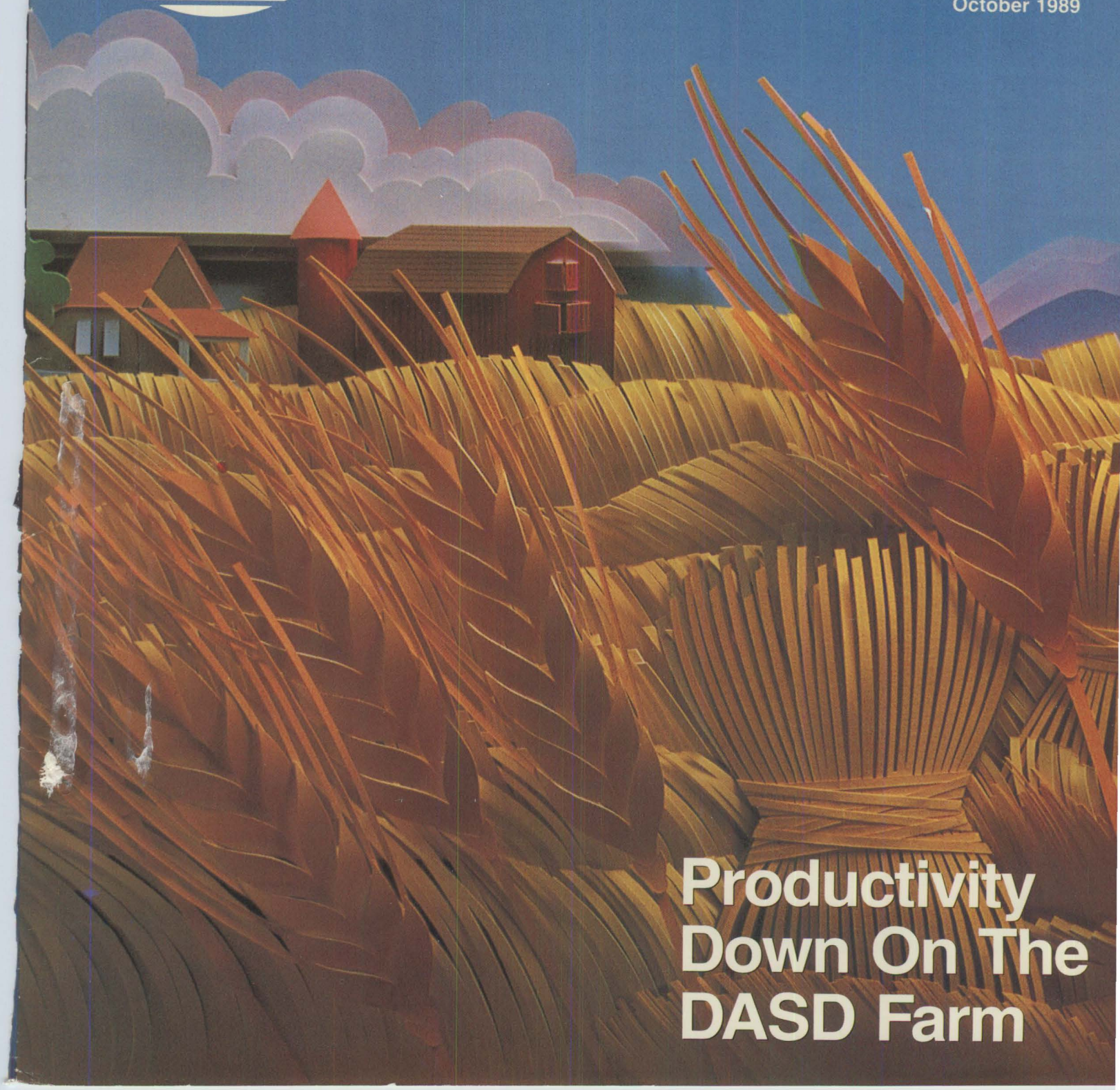
MAINFRAME JOURNAL

For Users of IBM System/370 Architecture & Compatible Systems

October 1989



Productivity Down On The DASD Farm

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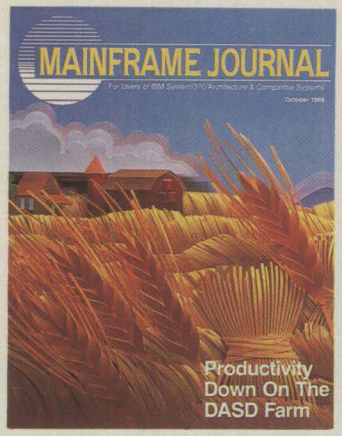
DEPARTMENTS



COVER:

Down on the DASD farm you will look at DASD utilization from the productivity perspective with a tongue-in-cheek comparison to a crop-production survey. Turn to page 104 for details. Cover illustration by Leo Monahan.

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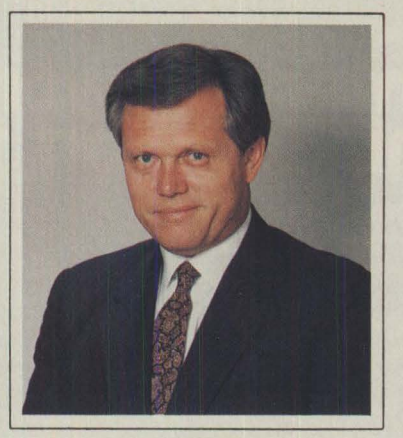

Bob Thomas

CONTINGENCY JOURNAL: The Magazine For Business Continuity Planning

When we began the process of selecting the editorial content for the September issue of *MAINFRAME JOURNAL,* one topic we had planned to feature with several articles was contingency planning. The area of contingency planning, as well as disaster recovery and security, has proven to be extremely popular with our readers. In fact, we have had more requests for article reprints on these topics than any other. After evaluating the need for this type of information, we decided to forego periodic coverage in *MAINFRAME JOURNAL* and instead, to launch a completely new magazine titled *CONTINGENCY JOURNAL: The Magazine For Business Continuity Planning*.

''Contingency Planning is the ability of an organization to fulfill its mission, *no matter what,*'' according to Philip Jan Rothstein, President of Rothstein Associates, Inc., a management consulting firm in Ossining, NY. ''Those *'no matter whats'* are tough. Sure, fires, floods and 'dust and rubble' belong here but what about the disruption of critical information?'' Some of the *'no matter whats'* to be covered in upcoming issues of *CONTINGENCY JOURNAL* are:

- Contingency Planning
- Disaster Avoidance
- Disaster Recovery
- Security
- Data Recovery
- Software Viruses
- Power Outages
- Fault-Tolerant Systems
- Electronic Vaulting
- Legal Liability
- Business Continuity
- Hostile Takeovers
- Loss Of Key Employees
- Strikes

The premier issue of *CONTINGENCY JOURNAL* will be launched in January 1990. If you think *CONTINGENCY JOURNAL* might be of benefit to you or someone else in your organization, reserve your copy now by sending in the Free Subscription Form in the ad on page 11.

FOCUS Newsletters To Be A Reality

Your response to *MAINFRAME JOURNAL's* six FOCUS Newsletters has exceeded our expectations.

Quite frankly, back in June when we first announced the FOCUS Newsletters in that issue of *MAINFRAME JOURNAL* and in our Action Card Deck, they were more of a speculative idea than a concrete actuality. At that time, we did not know if there would be sufficient interest to support not only the costs incurred with a series of newsletters, but also more importantly, the time and effort that development and production would take. Since June, the faith and confidence demonstrated by all of you who subscribed ''sight unseen'' is very much appreciated and has dictated that we cast the concrete and make the FOCUS Newsletters a reality.

Just as producing a solid software package that lives up to the customer's expectations takes time, so does developing solid FOCUS Newsletters on MVS, VSE, VM, CICS, VSAM and DB2. The objective of each FOCUS Newsletter is to provide more specific and timely information than is possible in *MAINFRAME JOURNAL*. Our target date for all six FOCUS Newsletters is January 1990. For subscription information see page 45.

Bob Thomas

MAINFRAME JOURNAL
For Users of IBM System 370 Architecture & Compatible Systems

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DB2 And The OS/2 Database Manager

By Howard Fosdick

With some 5000 estimated licenses, DB2 dominates the mainframe database market in the same way CICS rules the market for teleprocessing monitors. However, IBM has been less successful in selling its desktop relational DBMS. The OS/2 Database Manager, an integral part of OS/2 Extended Edition, has not yet established dominance. This is due to the generally slow acceptance of Operating System/2. Still, DB2 professionals would be wise to concern themselves with the OS/2 Database Manager and its potential impacts on their shops for several reasons.

Systems Application Architecture (SAA) makes it clear that IBM's four RDBMSes will converge. Features available on one DBMS will soon become available for the others. Studying DB2's counterpart RDBMSes on other platforms portends its future directions.

Also, IBM's distributed database plans call for communications between DB2 and the Database Manager. Many IBM shops will opt for a two-tier communications architecture with DB2 acting as a repository for data downloaded to desktop machines running OS/2 Database Manager. Last, industry experts predict the Database Manager will become a dominant desktop DBMS, especially in larger accounts.

These facts force DB2 professionals to confront a host of issues that must be resolved in order to foster a happy marriage between DB2 and the Database Manager. DB2 personnel must plan for the probable use of the Database Manager in their shops from the standpoints of both applications development and technical support. DB2 users must address these issues:

- How portable are code and applications between DB2 and the Database Manager?
- How can DB2 and the Database Manager coexist in the mixed systems environment postulated by SAA?
- Will programmer skills be transferable from DB2 to the Database Manager? What about end-user training?
- How will MIS deal with the support issues involved in this mixed system environment?

No one article can address all these issues. This article presents some key aspects of the Database Manager in terms of the applications development and support issues that DB2 professionals will encounter. The versions of the products this article refers to are DB2 Version 2 Release 1 and OS/2 Database Manager Version 1 Release 2.

SQL Programming

A starting point in comparing any two relational DBMSes is their versions of SQL. Figure 1 provides such a comparison.

Like DB2, the Database Manager features Data Manipulation Language (DML) and Data Definition Language (DDL). Its DML is basically the same. However, the Database Manager offers the additional keywords EXCEPT and INTERSECT for operating on the results of SELECT statements.

The Database Manager's DDL for logical objects (tables, views and indexes) is essentially the same as DB2's, while its DDL for physical objects (tablespaces, index spaces, storage groups and databases) is totally different. The Database Manager does not generally permit control over physical storage because the desktop machine requires greater ease of use and less technical expertise than the mainframe environment. PC users do not have expertise in database administration.

Until the announcement of OS/2 Database Manager Version 1.2, the product's only security was the assignment of a single password per database. There were no SQL GRANT or REVOKE statements. Version 1.2, due in November 1989, adds these DCL statements to Database Manager SQL. However, while the Database Manager's approach to security is conceptually similar to that of DB2, significant differences exist in security administration. The Database Manager's GRANT and REVOKE statements are much narrower in scope than their counterparts under DB2.

The bottom line for the SQL comparison, therefore, is that the user-oriented SQL is largely the same, while the levels of the language that map onto real storage and security are different. Database program code that only issues DML and logical DDL will be much more portable than code that manipulates physical objects or controls security.

End users and applications programmers who work with high-level SQL statements will see little difference between the Database Manager and DB2. DBAs and systems support staff will see major differences. However, they should find it easy to adapt to the differences in Database Manager SQL because it is similar to and more simple than DB2.

More Subtle Aspects Of SQL Programming

If you intend to port applications be-

tween the Database Manager and DB2, there are many, more subtle implementation differences to be concerned about than merely the SQL language. Here are a few examples:

- Isolation levels: prior to Version 1.2, the Database Manager supported REPEATABLE READ only; now it supports CURSOR STABILITY and a new option unavailable under DB2 called UNCOMMITTED READ
- Log: the Database Manager log is assigned per database rather than per DB2 subsystem; the Database Manager does not perform log archiving like DB2
- Recovery: the Database Manager rolls back like DB2, however, disaster recovery of a database is to the time of last backup (either full or incremental) rather than to the last commit point
- Catalogs: each Database Manager database is assigned its own catalog that has a smaller number of tables than DB2's and the contents and column names differ; the basic design and usage of the catalogs are the same as in DB2
- Utilities: Database Manager utilities are similar to those of DB2 in their functions; however, there are important differences in their operations and the manners in which they are invoked.

The above comparisons are only indicative and are not comprehensive. However, they should be enough to convince you that porting code and applications between the Database Manager and DB2 *could* be a complex undertaking, depending on the nature of the application. Difficulties can be vastly reduced by knowledge of these differences during applications development and design.

The porting of code requires a lot more than simply equivalent SQL. Factors like isolation levels and locking can be critical. Structural aspects of the DBMS, such as its approaches to the catalog, security, utilities, logging and recovery are also fundamental to successful cross-system applications.

The Applications Development Environment

To accurately address applications development and support issues, consider more than the DBMS itself. The availability of similar tools across environments

FIGURE 1

Database Manager Versus DB2 SQL

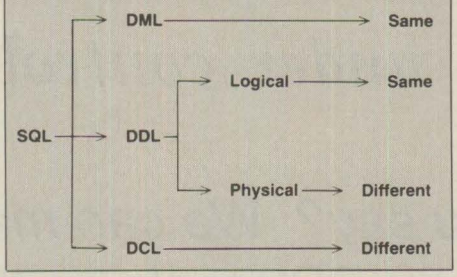

FIGURE 2

Database Manager Versus DB2 Applications Development Environment

Component Or Tool	DB Mgr.	DB2
QMF	–	X
Query Manager	X	–
Prompted Interface	X	X
Customized Interface	X	–
CSP	–	X
COBOL	X	X
PL/1	–	X
FORTRAN	X	X
C	X	X
REXX Interface	X	–
Presentation Manager	X	–
SAA Dialog Manager	X	–
ISPF Dialog Manager	–	X
ISPF/PDF Editor	X	X
TSO/ISPF	–	X
CICS	X	X
IMS/DC	–	X

probably does more to determine the transferability of programmer skills across systems than the similarities and differences of the DBMSes. For example, if a programmer generates applications with one tool with DB2 and that tool is not available with the Database Manager, a skills problem slows applications development regardless of how similar the DBMSes are. The mainframe programmer skilled in COBOL, ISPF/PDF and JCL who suddenly confronts C and the OS/2 command language on the desktop has the same problem. Applications development involves much more than compatible DBMSes.

This is, of course, the problem SAA addresses. Figure 2 shows that there is a definite disparity in the *applications development environment* between the Database Manager and DB2. While SAA is bringing great progress in this area from the viewpoint of applications developers and support personnel, there are still significant differences between the environments. Those working with multiple SAA RDBMSes need to be cognizant of these differences.

Also, recognize that the figure compares only IBM-vended tools for both environments. Any third-party software you use in either environment should be added to the comparison.

Many companies are committed to making their desktop development products compatible with the Database Manager. While tools are rare today, in the long-term application, development workstations will be available that fit well with both DB2 and the Database Manager.

Conclusions

The OS/2 Database Manager is, in spirit, DB2 on the PC. It contains the same broad sweep of features as DB2 and brings many of them, for the first time, to the desktop. In this respect, the Database Manager is an innovative product that breaks new ground.

While conceptually similar to DB2, the Database Manager is a different relational DBMS implementation. This article provides some examples of these differences but does not catalog them all. DB2 shops that obtain the OS/2 Database Manager and adopt IBM's SAA are wise to be cognizant of some of these less-frequently discussed issues.

There are many *real-world* factors important to MIS installations that deal with SAA DBMS other than DB2. Discussion among industry analysts, the press and vendors focuses primarily on SQL as the vehicle for transportability of applications and technical knowledge. This approach has merit. However, accepting it as a final answer is hazardous to MIS installations involved in real projects responsible for applications development and support. Developers must be concerned with operational characteristics of the DBMS and the larger applications development environment, as well as SQL language differences.

ABOUT THE AUTHOR

Howard Fosdick is President of the Midwest DB2 Users Group and a Vice President of the International DB2 Users Group. He has written six books and frequently lectures on technical topics and industry trends. Fosdick is an independent consultant. (312) 279-4286.